

RECLAMATION

Managing Water in the West

Environmental Assessment

Increasing Rearing Capacity for Natal and Non-Natal Coho Salmon: McGarvey Beaver Dam Analogue Project

2018-EA-007

Del Norte County, California



U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
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Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water related resources in an environmentally and economically sound manner in the interest of the American public.

Acronyms

AGPH	above ground post height
AHCP	Aquatic Habitat Conservation Plan
APE	area of potential effects
ATVs	all-terrain vehicles
BDA	beaver dam analogue
BiOp	Biological Opinion
BMPs	best management practices
CA	California
CAA	Clean Air Act
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DBH	diameter at breast height
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FONSI	Finding of No Significant Impacts
GDRC	Green Diamond Resource Company
GHG	greenhouse gases
GPS	Global Positioning System
ITA(s)	Indian Trust Asset(s)
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
No.	number

Environmental Assessment
McGarvey Beaver Dam Analogue Project

NWP	Nationwide Permit
PG	Professional Geologist
PIT	passive integrated transponder
Reclamation	Bureau of Reclamation
SHPO	State Historic Preservation Officer
SONCC	Southern Oregon/Northern California Coasts
SIP	State Implementation Plan
THPO	Tribal Historic Preservation Officer
U.S.	United States
USC	United States Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WGS	World Geodetic System
YTEP	Yurok Tribe Environmental Program
YTFP	Yurok Tribal Fisheries Program

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CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

This Environmental Assessment (EA) has been prepared to examine the potential direct, indirect, and cumulative impacts to the affected environment as a result of implementing a two-year pilot study entitled *Increasing Year-Round Rearing Capacity & Habitat Quality for Natal and Non-Natal Populations of Coho Salmon in a Priority Lower Klamath Tributary: McGarvey Beaver Dam Analogue (BDA) Project*. This project would be funded in the amount of \$108,910.50 by the Bureau of Reclamation (Reclamation) and administered through National Fish and Wildlife Foundation (NFWF) to the Yurok Tribal Fisheries Program (YTFP) as part of the 2016 Klamath River Coho Restoration Grant Program (Grant Program). The Grant Program was proposed by Reclamation as a conservation measure to address impacts from operation of the Klamath Project and was identified by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) in the *Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013, through March 31, 2023, on Five Federally Listed Threatened and Endangered Species* (2013 BiOp).

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) (42 United States Code (USC) §4321 et seq.), the Council on Environmental Quality Regulations for implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) Parts 1500-1508), and the Department of the Interior regulations for the Implementation of the NEPA (43 CFR Part 46). If there are no significant environmental impacts identified as a result of the analyses, a Finding of No Significant Impacts can be signed to complete the NEPA compliance process.

1.2 Background

YTFP would utilize the grant funding such that a series of BDAs would be installed and monitored in McGarvey Creek to provide improved coho salmon (*Oncorhynchus kutch*) habitat and other ecosystem benefits and greatly increase our understanding of this type of restoration treatment. McGarvey Creek is a third order stream that enters the Klamath River approximately 6.4 river miles upstream of the Pacific Ocean. The watershed supports spawning populations (natal fish) of Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon, steelhead (*Oncorhynchus mykiss*), and coastal cutthroat trout (*Oncorhynchus clarkii*); as well as provides rearing habitat for juvenile salmonids, particularly coho salmon, from throughout the Klamath Basin (non-natal fish). YTFP identified McGarvey Creek as a high priority tributary for coho habitat enhancement due to the close proximity

of the watershed to the ocean and the amount of low gradient habitat available to natal and non-natal populations of coho salmon and other native fish. Coho salmon in the Klamath Basin, as part of the Southern Oregon/Northern California Coasts (SONCC) Evolutionary Significant Unit (ESU), were listed as threatened under the Endangered Species Act (ESA) in 1997. Critical habitat was designated May 5, 1999, and includes all accessible reaches of all rivers (including estuarine areas and tributaries) between the Mattole River in California and the Elk River in Oregon, inclusive (NMFS 1999).

Although YTFP implements restorative actions that support all salmonid life stages and promotes multiple ecosystem benefits, there is a critical need to increase juvenile rearing capacity within Lower Klamath tributaries with a particular focus on SONCC coho. Coho salmon complete a full year residency in freshwater before out-migrating and therefore require stable cold water habitats during the summer and areas offering low-velocity refuge during the winter. Beaver influenced habitats have been found to provide productive salmonid rearing habitat, prolong stream flows during late-summer, expand floodplains, increase ground water recharge, and dissipate the erosive power of floods (Pollock et al. 2003). Beaver ponds tend to be more productive in terms of number and size of fish, especially for juvenile coho, than free-flowing stream reaches. Studies conducted in a beaver pond located in West Fork McGarvey Creek indicated this feature provided significant, high quality rearing habitat for juvenile coho and resulted in higher growth rates and survival relative to off-channel and mainstem habitats.

1.3 Purpose and Need

The purpose of this restoration program is to provide improvement of fish and wildlife habitat within the Klamath River Basin and to support restoration activities for SONCC coho salmon and its critical habitat. More specifically, the purpose of funding this project would serve to 1) increase the amount of summer rearing habitat by storing surface waters and recharging ground water tables, 2) improve winter rearing conditions in McGarvey Creek by increasing the amount of slow velocity refuge areas, as well as 3) increase rearing habitat resiliency to environmental perturbations such as seasonal and/or pro-longed drought and potential future climate change impacts.

Lower Klamath River tributaries, such as McGarvey Creek, provide critically important rearing habitat for juvenile coho salmon throughout the entire Klamath Basin (Beesley and Fiori 2004; Hiner and Brown 2004; Beesley and Fiori 2007; Soto et al. 2008; YTFP 2009; Hiner et al. 2011; Antonetti et al. 2012 & 2014). Lower Klamath tributary habitats provide juvenile coho refuge from high water velocities or poor water quality conditions occurring in the river and offer diverse habitats and cover for fish to forage and/or stage prior to initiating ocean entry. Lower Klamath rearing habitats are especially important to juvenile coho from

winter-spring where they can directly influence fish growth and survival just prior to ocean entry. During the summer low flow period, Lower Klamath tributaries provide vitally important cold water refuge for natal and non-natal juvenile coho. Given the significant use of Lower Klamath tributaries by juvenile coho throughout the entire basin, basin managers including YTFP view restoration of these habitats as a high priority Klamath Basin coho recovery strategy (CDFW 2004; NMFS 2014).

The need of the proposal to fund the the YTFP project is to remain consistent with the conservation measures outlined in the 2013 BiOp on continued operation of the Klamath Project.

1.4 Location

The project is located in the McGarvey Creek watershed, tributary to the Klamath River, in Del Norte County, California (Appendix A). McGarvey Creek is located near the town of Klamath, California. The project area is contained within the Yurok Tribe Reservation and includes the stream channel and adjacent floodplain habitats of lower McGarvey Creek. A majority of the watershed and the entire project area is owned by Green Diamond Resource Company (GDRC) who manages the property for industrial timber harvest. GDRC has provided approval for YTFP and our contractors to conduct the project and would grant access to the site for project partners.

As shown in Appendix A, the BDAs would be installed at two sites located in the lower reach of McGarvey Creek and monitoring activities would include the BDA sites and stream habitats located both upstream and downstream of the BDAs (approximately 1,650 feet of channel). The project area is contained within Range 1 East, Township 13 North, Sections 24-25 (U.S. Geological Survey (USGS) Topographic Quadrangle: Fern Canyon, California).

The most downstream BDA series would be installed in McGarvey Creek approximately 5,774 feet upstream of the confluence with the Klamath River (latitude: 41.494, longitude: -124.004; decimal degrees, geographic coordinate system, World Geodetic System (WGS) 84). The upstream BDA series would be installed approximately 6,634 feet upstream of the Klamath River confluence (latitude: 41.493, longitude: -124.006).

1.5 Authority

Through its delegated authority under the Fish and Wildlife Coordination Act (16 USC 661 et seq.) as amended, Reclamation is authorized to provide funding assistance for the improvement of fish and wildlife habitat affected by Reclamation's water resource development.

CHAPTER 2

ALTERNATIVES

Under this EA, various sites were considered for the Proposed Action Alternative. Due to location, surrounding environment, access, etc., all but two sites were eliminated from further consideration. The two alternatives include the No Action Alternative and the Proposed Action Alternative. The No Action Alternative reflects conditions without the Proposed Action Alternative and serves as a basis of comparison for determining potential effects to the human environment as a result of implementing the Proposed Action Alternative.

2.1 Alternative 1 – No Action

Under the No Action Alternative, Reclamation would not provide funding and NFWF would not administer \$108,910.50 to YTFP to work under their Klamath River Coho Restoration grant and execute the habitat enhancement project in McGarvey Creek, Del Norte County, California. Anadromous fish habitat would remain in its current condition with the potential to become less habitable in the future, especially in the face of climate change and prolonged drought.

2.2 Alternative 2 – Proposed Action Alternative

Under the Proposed Action Alternative, Reclamation would provide funding in the amount of \$108,910.50 and provide a notice to proceed for NFWF to administer to YTFP funding. The funding would be used for installing, maintaining, and monitoring a series of six BDAs (three BDAs at two sites) in mainstem McGarvey Creek to increase salmonid rearing capacity and improve understanding of this type of treatment.

The Proposed Action Alternative would occur on GDRC property (i.e., private lands) located in lower McGarvey Creek. More specifically, the most downstream BDA series would be installed approximately 5,774 feet upstream of the confluence with the Klamath River while the upstream BDA series would be installed approximately 6,634 feet upstream of the Klamath River confluence.

To better understand BDA performance, a majority of the proposed funding would be used to support biological and physical monitoring of the project. Funding would also help support a majority of the BDA installation and repair activities scheduled for the typical construction season: June 15 – November 1. Overall, with the funding provided YTFP would conduct the following: 1) BDA installation and BDA repairs during the typical June 15 – November 1 construction season, and 2) biological and physical monitoring as described

below. Photographs of the Project reach and examples of antenna stations can be found in Appendix B.

2.2.1 Construction Activities

Construction activities include BDA installation, maintenance, and repair of the structures at two sites in McGarvey Creek for a minimum of two years (i.e., Project Performance Assessment Period). Each site would consist of a series (three) stepped BDA structures in close proximity to avoid or minimize an impediment to fish migration through the stream. BDA construction, maintenance, and repair would follow methods described in the Beaver Restoration Guidebook (Pollock et al. 2015). This work would occur during the typical construction season: June 15 – November 1 and involve various best management practices (BMPs). General design plan can be seen in Appendix C.

BDA construction would involve embedding untreated wood posts (average six-inch diameter) in to the active channel and portions of the adjacent flood prone surfaces. The BDAs would be oriented perpendicular to flow, and extend laterally on to both banks. McGarvey BDAs would have an average length of 70 feet within the active channel, plus the potential to have additional 25-foot extensions located on each adjacent bank, for a maximum length of approximately 120 feet. The purpose of the BDA extensions would be to add roughness and prevent or limit stream bank erosion. The actual length of each BDA would depend on stream channel and floodplain conditions at the time of construction. However, based on over 10 years of monitoring by the YTFP, it is not anticipated the total length of a BDA would exceed 120 feet. Posts would be installed with an approximate 12 to 18-inch spacing, and would be embedded several feet into the substrate (e.g., 4-10 feet). The above ground post height (AGPH) is measured as the distance from the channel bottom to BDA crest. The AGPH may vary within a single BDA and may also vary among the individual BDAs. However, the maximum AGPH of each individual BDA would be four feet. Once installed, posts would be cut to facilitate a smooth nappe during weir flow conditions, which generally occur during high flow events. This design feature would aid passage success of leaping fish. Care would be taken to maintain both adult and juvenile salmonid passage at each BDA site.

Locally harvested willow (or similar e.g., red alder) branches (15-inch diameter) would be woven between the posts to form a basket-like structure that spans the active channel and extends on to the adjacent floodprone surface at each BDA. Other materials would be layered into the weave and used to construct the BDA berm. The BDA berm would be located within the active channel on the upstream facing side of each BDA and composed of organic and earth materials. Materials used to construct the weave and berm would include locally sourced earth materials (i.e., fine- and coarse-grained sediments: sands, silts, clays, gravels and cobble), vegetation (i.e., grass, forbs, sedges), and sterile, weed-free straw. Straw,

vegetation, and earth materials would be layered and tamped to form the BDA berm. The purpose of the berm is to improve water holding capacity and help defend the BDA against potential scour associated with floods up to but not exceeding a five-year event. Gravel and cobble materials would be used to ballast the buoyant materials and/or to help seal interstitial spaces. For this project, a maximum of 31 cubic yards of gravel/cobble materials would be used in BDA construction, maintenance, or repair. Additionally, up to 17 cubic yards of fine-grained earth materials may be incorporated into the BDAs to minimize permeability and promote ground water recharge.

Construction activities also include maintenance and repair of installed BDAs, and in some cases installing additional BDAs, in response to different hydrologic events, scour, substrate accumulation, channel bed elevation changes, and/or natural beaver manipulation. Maintenance and repair would be driven by an adaptive management strategy that would generally adhere to the following Beaver Restoration Guidebook principals:

BDAs are intended to mimic beaver dams, they require ongoing maintenance and repair, similar to beaver dams. The amount and type of maintenance needed depends on project objectives. Typical maintenance includes extending the length of the structure as a result of end cutting, replacing sections that have been damaged (often from underscour), and raising the height of a structure, typically by constructing a new BDA on top of the sediment wedge that has accumulated upstream of an existing BDA.

Adequate flow through and around the BDAs, to allow fish passage and support aquatic life downstream of the sites, would be maintained by periodically adjusting the stage height and/or permeability of the BDAs. Reclamation/NFWF funding would not support activities such as repairs or adjustments that are conducted outside of the construction season. BDAs would be designed such that a middle section of the BDA would fail during a five-year or greater flood event. However, if it is determined the BDAs impede adult or juvenile fish passage, portions of the BDA would be adjusted or removed by hand to ensure fish passage is volitionally available. The purpose(s) of these measures are to ensure normal sediment transport processes, fish passage, and spawning gravels are not impaired within the project reaches. BDAs would then be reconstructed during the following construction season.

Following installation, YTFP anticipates the McGarvey BDAs would provide approximately one acre of low velocity, deep water habitat at each site that would persist through the summer baseflow period. Placement and design of the BDAs would be conducted in a manner that induces backwater in the mainstem channel and in two existing, constructed alcove features. YTFP reviewed the salmonid spawning data for McGarvey Creek and selected BDA sites located downstream of known spawning reaches so as to avoid impacts to productive spawning areas.

2.2.1.1 Access & Staging

Existing timber roads located along the stream channel and a few small trails would be used to access the BDA construction and monitoring sites. The GDRC M600 road runs along the project reach and is suitable for vehicle use and thus would be the primary access route to the BDA sites.

Temporary access trails through riparian areas would be less than 15 feet wide with alignments created to cause the least damage possible to vegetation and soils. No native trees greater than 16 inches diameter at breast height (DBH) and 20 feet tall nor any trees with cavities and/or nests would be removed (see sections 3.2.2.2 and Chapter 4 for more information). Riparian vegetation (greater than 2 inches DBH) removal would not exceed areas greater than 0.25 acres total. Trail locations would be determined based on conditions at the time of construction to maximize resource protection. Staging of materials, tools, and any associated equipment would occur on pre-existing roadways and therefore would not require any ground, soil, or vegetation disturbance.

2.2.1.2 Construction Disturbance Footprint

Ground disturbance associated with the construction activities (i.e., initial BDA installation and maintenance) was estimated to not exceed 0.43 acres and 498 linear feet.

Table 1.—Estimated Construction and Maintenance Related Ground Disturbance for the Proposed McGarvey BDA Sites

Location	Feature	Stream Zone Operations (acres)	Upland Operations (acres)	Stream Zone Operations (feet)	Upland Operations (feet)
Site 1 (Alcove 3)	BDA	0.09	0.05	70	50 ¹
	Access Trail	-	0.03	-	65
Site 2 (Alcove 4)	BDA	0.09	0.05	70	50 ¹
	Access Trail	-	0.12	-	190
Totals		0.18	0.25	140	358

¹ The 100 feet estimated for upland operations is to account for potential disturbance related to BDA extensions that would occupy the adjacent streambanks and floodprone surfaces. The BDA extensions would most likely be installed within the footprint of the access trails so the total disturbance footprint is therefore a conservative estimate. Additionally, the extensions would likely only be installed on the upstream most BDAs at each site.

2.2.1.3 Equipment

BDA installation and repairs funded by Reclamation/NFWF funds would only occur during the typical construction season: June 15 - November 1. If the streambed is dry or flows are at or below summer baseflow condition, a handheld hydraulic pounder or an appropriately sized excavator capable of meeting project

objectives and BMPs may be used to place posts. For these flow conditions, excavators with the following specifications would be used:

- 8 to 12-foot track width, 18 to 22-foot reach, 3 to 10 pounds per square inch (psi) (greater than 5 psi per track) ground pressure.

If an excavator within this size class is not available, the next smaller or larger excavator may be used. During sub-surface or low flow conditions, an excavator with the above description may operate within the wetted channel following the appropriate BMPs; however, every effort would be made to avoid this practice.

If flows are above baseflow, an excavator with the above description may be used to place posts from the bank following the appropriate BMPs. During the typical construction season, pickup trucks and/or heavy equipment such as the excavator and/or a loader may use roads and access trails to deliver material to the BDA sites.

All heavy equipment operations would be led and/or implemented by YTFP's restoration consultant Rocco Fiori (Fiori GeoSciences), a California Licensed Professional Geologist (PG) and experienced operating engineer/fluvial geomorphologist (Rocco Fiori - PG #8066). Mr. Fiori would oversee YTFP fisheries technicians operating heavy equipment with supervision and coordination assistance from qualified Yurok staff including YTFP biologists, higher level YTFP technicians, and the Yurok Tribe Watershed Restoration Department Foremen.

2.2.2 Water Quality and Aquatic Vertebrate Management

Stream flows would be low and possibly sub-surface in the McGarvey BDA Project reach during the construction season. BDA placement/repair in any intermittent or flowing portions of the stream would be undertaken in a manner that avoids/minimizes potential water quality impacts, and any potential impacts to aquatic vertebrates that may be present.

It is not anticipated that de-watering of any of the BDA work sites would be required. Managing water quality within the project reach without de-watering work sites is feasible and preferred for this project given: 1) the nature of BDA placement and/or repair activities, 2) flows would be low to sub-surface, and 3) managing water quality in situ is generally substantially less impactful to aquatic dependent species and their habitats relative to de-watering.

If flowing water persists during the construction work period, turbidity levels would be visually monitored in four consecutive pools downstream of the work area. If turbidity levels rise above background in the fourth downstream most pool, work would be suspended until water clarity improves and there is no

further downstream progression of a turbidity plume. Additional turbidity control measures (e.g., silt curtains) may be employed to avoid or minimize turbidity and ensure local (i.e., within the first four downstream pools) containment of any turbid water.

If work requires heavy equipment to operate directly within the channel where flowing water is present, the equipment would work on a series of posts laid out as a temporary corduroy work platform. The posts would be placed to minimize disturbance to the wetted streambed and would be removed as the work is completed. As described above, turbidity levels would be visually monitored in four consecutive pools downstream of the work area and activities halted and/or better managed if turbidity above background levels is observed in the fourth, most downstream pool. This “Four Pool” BMP has been approved for use in past McGarvey Creek restoration projects by CDFW and the Yurok Tribe Environmental Program and for use by CDFW in BDA projects conducted by the Scott River Watershed Council in the Scott River and its tributaries.

YTFP does not anticipate a need to relocate any fish as a result of this project. It is likely that flows would be sub-surface during the time of construction and therefore fish and other aquatic dependent vertebrates would be easily excluded from work areas using simple exclusion measures. However, conditions would be assessed at least two weeks prior to initiating any construction activities to determine the exact strategies to be employed to avoid and/or minimize affects to aquatic vertebrates and their habitats. All fish exclusion and relocation BMPs are listed below and follow all requirements outlined in the 2013 BiOp.

2.2.3 Project Timelines

BDA installation and major repair activities would only occur during the typical construction season: June 15 – November 1. BDA installation is anticipated to occur in summer 2018 with equipment and crews accessing the creek daily for at least one to two weeks per BDA site. Work during the construction season would occur Monday-Sunday during daylight hours (i.e., 7:00 a.m. to 7:00 p.m.). Major BDA repairs would only be conducted during the construction season and are anticipated to be necessary following winter 2018-2019. Major BDA repairs would likely occur in summer 2019 with equipment and crews accessing the creek daily for at least one to two weeks per BDA site. Multiple trips in and out of the BDA sites, either by foot or mechanized equipment/vehicles, are anticipated to be necessary during the proposed summer work periods. Access trails would be inspected constantly during the construction season and all necessary measures would be taken to ensure travel to/from BDA sites does not result in resource impacts. An estimated schedule for the proposed project can be seen in Appendix D.

2.2.4 Monitoring Activities

Monitoring activities would be conducted throughout the year; however, installation of the Passive Integrated Transponder (PIT) tag antenna arrays and any major repairs would be conducted during the typical construction season to avoid resource impacts. For antenna array installation, equipment and crews would need to access the creek for at least one week per site. Multiple trips in and out of the work areas, either by foot or mechanized equipment/vehicles, are anticipated to be necessary for antenna installation. Access trails would be inspected constantly during the construction season and all necessary measures would be taken to ensure travel to/from work sites to avoid or minimize resource impacts.

A majority of the Reclamation/NFWF funds would be used to support BDA performance monitoring activities. These activities would include both biological and physical monitoring at the BDA sites and within reaches upstream and downstream of the BDA sites. Monitoring activities are anticipated to result in minimal to no impacts to soil, vegetation, water quality, and native biota.

2.2.4.1 Biological Monitoring

Biological monitoring would be focused on assessment of salmonid use of BDAs and salmonid passage at the BDAs. Fish passage would be assessed using PIT technology (i.e., PIT tags and PIT tag antenna arrays). Following the initial construction of the BDAs, multiple PIT tag antenna arrays would be installed at the following locations: 1) downstream of the lowermost series of BDAs (BDA 1), 2) in between the lowermost BDA series and the upper BDA series (BDA 2), and 3) upstream of the uppermost BDA.

Antenna array installation would include the following activities: access to the site by foot and/or all-terrain vehicles during the typical construction season, use of hand tools to place the arrays into the substrate, embedding T-posts (up to 46) for antenna support, and building a small platform to hold the MUX unit and batteries. Antennas would be placed in the stream perpendicular to the primary flow direction. Arrays would be set into small trenches that would be constructed using hand tools such as shovels and McCleods to eliminate or minimize the potential for underscour. On average, the antenna trenches would be approximately 10 inches wide (maximum), 3 – 6 inches deep, and 70 feet long. T-posts would be embedded on either side of each antenna to support it against flow and transported sediment and small/medium sized wood. T-posts would be 8 – 10 feet in height and embedded approximately 2 – 4 feet into the substrate spaced at 10 – 15 feet. Small wooden platforms would be attached to existing mature trees within the project area to hold the MUX unit and batteries. The platforms would be affixed using heavy duty nails and tow straps.

2.2.4.2 Physical Monitoring

Physical monitoring would consist of conducting habitat assessments including habitat mapping, BDA inspections, topographic surveys, and collecting stream flow and water quality information. These activities would consist of crews accessing various monitoring sites located within the project area by foot. Crews of one to three people would use existing roads (e.g., GDRC's M10 and M600) and BDA trails (described in the Construction section above) whenever possible to avoid/minimize impacts to vegetation and soils. Where trails do not already exist, crews would take care when traveling through riparian habitats and the stream corridor by applying BMPs to avoid and/or minimize resource impacts. For the topographic surveys, a real-time kinematic Global Positioning System survey unit and an optical total station supported by tri-pods and various prism poles would be used to collect elevation information from the streambed and floodplains. Various handheld devices would be used to collect water quality and flow related information.

2.2.5 Integrated Best Management Practices (BMPs) and Mitigation Measures

- The following list of BMPs is currently proposed for the McGarvey BDA Project. YTFP would continue working with State/Federal resource agency partners to add to and/or refine the BMP list if necessary. State coordination is required when conducting projects on GDRC lands per the protective measures outlined in GDRC's AHCP and programmatic California Environmental Quality Act.
- Prior to construction, YTFP would provide contractors with the work plan, project BMPs, and all required permits/authorizations, and would keep a copy of these materials on-site at all times. All project guidelines would also be reviewed by YTFP staff prior to construction.
- The general construction season would be from June 15 – November 1. For the McGarvey BDA Project, construction consists of BDA installation and major BDA repairs.
- All requirements from any associated Federal, State, and/or local permits would be followed.
- YTFP would annually coordinate with USFWS on bird activity prior to initiating construction. If bird activity conditions for ESA listed species and/or raptors change within the project area, then YTFP would employ all related restrictions as set forth by GDRC and USFWS. If bald and/or golden eagles and/or migratory birds are found, construction would not be

permitted during nesting or breeding seasons and a 300-foot buffer would be placed around the nest as a no-construction zone.

- Prior to construction, determine locations and equipment access points that minimize riparian disturbance. Retain as many trees and as much understory brush as feasible, emphasizing shade-producing and bank-stabilizing trees and brush. Avoid entering unstable areas.
- Minimize soil compaction by using equipment with a greater reach or that exerts less pressure per square inch on the ground than other equipment, resulting in less overall area disturbed or less compaction of disturbed areas. Decompress disturbed soils at project completion.
- Any stream bank area left barren of vegetation as a result of the implementation or maintenance of the practices would be restored to a natural state by seeding, planting (or by other means) with native trees, shrubs, or grasses. Plant survival in these areas would be monitored and if 70 percent survival is not attained within five years, the area would be re-planted and care would be taken to ensure adequate survival. If revegetation efforts would be passive (i.e., natural revegetation), success would be defined as total cover of woody and herbaceous material equal to or greater than pre-project conditions. If at the end of five years, vegetation has not successfully re-established, the area would be planted and monitored as described above. Planting and survival monitoring would proceed in five-year increments until success is achieved.
- Wherever feasible, heavy equipment would be operated from the bank. Only after this option has been determined infeasible would use of heavy equipment in the channel be considered. The time equipment is stationed, working, or traveling in the channel would be minimized.
- Areas for fuel storage, refueling, and servicing of construction equipment would be located upland on pre-existing roadways/landings.
- All mechanized equipment working in the stream channel or within 25 feet of a wetted channel would have a double containment system for diesel and oil fluids. Hydraulic fluids in mechanical equipment working within the stream channel would not contain organophosphate esters. Vegetable based hydraulic fluids are preferred and would be used where possible.
- All construction equipment would be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment would be thoroughly cleaned and inspected and evaluated for the potential of fluid leakage. All mechanical equipment would be inspected on a daily basis to ensure there are no motor oil, transmission fluid, hydraulic fluid, or coolant leaks. Any leaks would be repaired in the

equipment staging area or other suitable location prior to resumption of construction activity.

- Oil absorbent and spill containment materials would be located on site when mechanical equipment is in operation within 100 feet of the proposed watercourse crossings. If a spill occurs, no additional work would commence in-channel until (1) the mechanical equipment is inspected by the contractor, and the leak has been repaired, (2) the spill has been contained, and (3) all required regulatory agencies are contacted and have evaluated the impacts of the spill.
- All heavy equipment operations would be implemented by or directed by Fiori GeoSciences.
- Debris, soil, silt, excessive bark, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project related activities, would be prevented from contaminating the soil or entering waters of the U.S. Any of these materials that the applicant or contractor placed within or where they may enter a stream or lake would be removed immediately. During project activities, all trash that may attract potential salmonid predators would be properly contained, removed from the work site, and disposed of daily.
- Effective erosion control measures (e.g., sterile/weed-free straw, silt fences) would be properly installed at all locations at all times during and after construction where the likelihood of sediment input exists for the purposes of minimizing fine sediment input into flowing water and detaining sediment-laden water on site. If continued erosion is likely to occur following the construction season, control measures would be maintained and increased if necessary, until the erosion subsides. No control measures such as fiber rolls or blankets with plastic netting or any natural netting will be used for this project.
- Post-construction, any access trails created for the project would be removed by restoring natural contours, and all bare and/or disturbed slopes (greater than 100 square feet of bare mineral soil) would be treated with erosion control measures such as slash, weed-free straw/hay bales, fiber rolls, and hydroseed. Where straw, mulch, or slash is used as erosion control on bare mineral soil, the minimum coverage would be 95 percent with a minimum depth of two inches.
- Only seeds from native plant species would be used for seeding. Only sterile (without seeds), weed-free straw and bales would be used for erosion control and BDA construction.

- Upon the completion of restoration activities, roads within the riparian zone damaged by the permitted activity would be weather proofed according to measures as described in Handbook for Forest and Ranch Roads (Weaver and Hagans 1994) and in Part X of the CDFG Manual entitled Upslope Assessment and Restoration Practices (Flosi et al. 1998).

2.2.6 Fish Exclusion/Relocation BMPs

Fish exclusion and any relocation activities deemed necessary, would be conducted by qualified YTFP Fisheries Biologists according to the NMFS and CDFW standards following methods outlined by NMFS' Arcata Office Programmatic Biological Opinion (2011/6430):

- Fish exclusion and/or relocation activities would only occur between June 15 and November 1 and would be conducted prior to initiating any construction within the wetted channel.
- Fish exclusion and/or relocation activities would be performed by a qualified fisheries biologist (i.e., minimum of three years of experience in the identification and capture of salmonids, including juvenile salmonids) or under the direct supervision of a qualified biologist.
- Prior to initiating construction within the wetted channel, qualified biologists would determine if fish and other aquatic vertebrates can easily move out of the work area voluntarily or not:
- If fish are able to leave voluntarily, the biologists would employ some form of fish hazing prior to conducting work to encourage any vertebrates to move out of the area and place exclusion netting once all animals have left. Qualified biologists would monitor the work site and exclusion netting for the duration of construction to ensure safety of aquatic vertebrates.
- If fish are not able to leave the work area voluntarily, biologists would work with local NMFS staff and follow NMFS guidelines to determine the best approach for fish exclusion/relocation. YTFP will provide NMFS with at least one week advance notice to allow for review.
- The biologist would note number of salmonids observed in the affected area, number and salmonid species relocated, relocation site(s), and date/time of collection and relocation.
- The biologist would adhere to the following requirements for capture and transport of salmonids:
 - Determine the most efficient means for capturing fish (i.e., seining, trapping, electrofishing).

- Notify NMFS one week prior to capture/relocation of salmonids.
 - In streams with high water temperature, perform relocation activities during morning periods.
 - Prior to capturing fish, determine the most appropriate release location(s).
 - Relocation sites would provide: (a) Similar water temperature as capture location; (b) Ample habitat for captured fish; (c) Low likelihood of fish reentering work site or becoming impinged on exclusion net or screen; and (d) must be located within the same HUC 8 watershed.
 - Periodically measure air and water temperatures. Cease activities when water temperatures exceed 17.8 °C. Temperatures would be measured at the head of riffle tail of pool interface.
- Salmonid fish would not be overcrowded into buckets; allowing approximately six cubic inches per young-of-the-year (0+) individual and more for larger fish.
 - Every effort shall be made not to mix age 0+ salmonids with larger salmonids, or other potential predators. Have at least two containers and segregate age 0+ fish from larger fish.
 - Place larger amphibians, such as Pacific giant salamanders, in container with larger fish.
 - Salmonid predators collected would be relocated so as to not concentrate them in one area to minimize predation. Particular emphasis would be placed on avoiding relocation of predators into the steelhead and coho salmon relocation pools.
 - All captured salmonids would be relocated, preferably upstream, of the proposed construction project and placed in suitable habitat. Captured fish would be placed into pools, preferably with a depth > two feet with available instream cover.
 - All captured salmonids would be processed, allowed to recover from capture activity, and released prior to conducting a subsequent capture event.
 - Minimize handling of salmonids. When handling is necessary, handlers would always wet hands or nets prior to touching fish. Handlers would not wear DEET based insect repellents.
 - Temporarily hold fish in cool, shaded, aerated water in a container with a lid. Protect fish from jostling and noise and do not remove fish from this container until time of release.

- Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18°C, fish shall be released in a safe manner and rescue operations ceased.
- Where aquatic vertebrates are abundant, periodically cease capture, and release at predetermined locations.
- Visually identify species and estimate year-classes of fishes at time of release. Record the number of fish captured. Avoid anesthetizing or measuring fish.
- If more than 3% of the salmonids captured are killed or injured, the project lead shall contact NMFS. The purpose of the contact is to allow the agency a courtesy to review activities resulting in take and to determine if additional protective measures are required. All salmonid mortalities must be retained, placed in an appropriately sized whirl-pak or zip-lock bag, labeled with date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by NMFS.

Electrofishing would be avoided wherever possible; however, if deemed the only option for fish capture, then all NMFS guidelines listed below would be followed.

- All electrofishing would be conducted by properly trained personnel, and according to NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act (NMFS 2000) (Note: YTFP Biologist staff have received this training).
- The backpack electrofisher would be set as follows when capturing fish:
- Voltage setting on the electrofisher would not exceed 300 volts.
- Voltage: 100 Volts (initial), 300 Volt (max).
- Duration: 500 microseconds (initial), 5 milliseconds (max).
- Frequency: 30 Hertz (initial), 70 Hertz (max).
- A minimum of three passes with the electrofisher would be conducted to ensure maximum capture probability of salmonids within the area proposed for exclusion.
- No electrofishing would occur if water conductivity is > 350 microSiemens per centimeter ($\mu\text{S}/\text{cm}$) or when water temperatures exceed 17.8 C. Direct current (DC) shall be used;

- A minimum of one assistant would aid the biologist by netting fish and aquatic vertebrates.
- Reporting to Reclamation's Klamath Basin Area Office would immediately occur should any coho salmon be captured, relocated, injured, or killed. Identification and tracking of any coho salmon captured, relocated, injured, or killed will ensue. All coho salmon mortalities must be retained and, placed in an appropriately sized whirl-pak or zip-lock bag and, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by Reclamation as coordinated with the NMFS.

2.2.7 Additional Requirements

The landowner, GDRC, operates under a number of State and Federal regulatory compliance and permit requirements which are included in their 1) Aquatic Habitat Conservation Plan (AHCP) and Candidate Conservation Agreement and Assurances (GDRC 2007); and 2) Master Agreement for Timber Operations By and Between California Department of Fish and Game and GDRC (GDRC 2010). Both documents contain environmental protection measures focused on species protection, riparian management zone protections, slope stability measures, forest road management requirements, and harvest related measures. YTFP would be required to follow all applicable protective measures outlined in GDRC's AHCP and programmatic State of California environmental compliance documents when conducting projects on GDRC lands. In addition to the integrated BMPs listed above, GDRC employs additional weather-related restrictions during the construction season which require close monitoring of rainfall accumulation and weather patterns. Instream restoration projects may occur on GDRC lands from October 16 through November 15, if "dry fall" conditions occur (i.e., less than four inches of cumulative rainfall from September 1 through October 15) under the following restrictions:

- All erosion control measures are in place to cease operations for the season with work scheduled in a manner that ensures a site can be completed within one operational day, or if a site requires multiple days for completion, a long-range National Weather Service forecast of no rain for the next five days has been issued. Every care would be taken to close out projects.

Seasonal roads may continue to be accessed; however, seasonal road use must cease if turbid or sediment laden waters connect to or are delivered to any watercourse.

CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment and evaluates the environmental consequences that could result from the No Action and Proposed Action Alternatives.

3.1 Resources Not Analyzed in Detail

Impacts to the following resources were considered and found to be insignificant or absent. Brief explanations for their elimination from further consideration are provided below.

3.1.1 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets that are held in trust by the United States for federally recognized Indian Tribes or individuals. The Proposed Action Alternative's project is located within the Yurok Tribe Reservation and a few miles upriver from the Resighini Rancheria. As shown in Appendix E, on August 11, 2017, the Klamath Basin Area Office ITAs coordinator reviewed the proposed project and stated that although the Proposed Action Alternative project location "appears to be in an area that may impact Indian Hunting and/fishing resources, the resultant impacts area expected to be insignificant in nature as the purpose of the Proposed Action Alternative is to restore and enhance salmon habitat, and is anticipated to have a beneficial impact on the resource...It is reasonable to assume that the Proposed Action Alternative will not have any adverse impacts in ITAs."

3.1.2 Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe, or individual Indian determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the Tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." No Indian sacred sites have been identified in the project area.

3.1.3 Environmental Justice

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its programs, policies, and activities on minority populations and low-income populations. Reclamation has not identified adverse human health or environmental effects on any population as a result of implementing the Proposed Action Alternative. Since there would be no permanent impact to any populations, there would be no adverse human health or environmental effects to minority or low-income populations as a result of the Proposed Action Alternative.

3.1.4 Recreation

The project is located on private timber land which is not open to recreational use by the public. Therefore, no impacts to recreational use are anticipated to occur as a result of the project.

3.1.5 Noise

The proposed project area is somewhat impacted by traffic noise as it is approximately 200 feet away from GDRC's M300 timber road; thus, the additional noise associated with the Proposed Action Alternative's related construction is expected to be minor and temporary. Noise impacts created by the use of heavy motorized equipment would be minimized by limiting construction activities to 7:00 a.m. to 7:00 p.m., Monday through Sunday. Work hours outside this period would need approval in advance by Reclamation, and, upon approval, YTFP would be required to contact adjacent landowners, if applicable, prior to work commencing. There would not be any long-term increases to the ambient noise levels from the implementation of the Proposed Action Alternative.

3.1.6 Socioeconomics

The Proposed Action Alternative would create a short-term demand for construction related products and services, creating short-term jobs and supporting local vendors. However, they are of such small scale and temporary, socioeconomics was not analyzed in detail.

3.1.7 Air Quality

Section 176 (c) of the Clean Air Act (CAA) (42 USC 7506 (c)) requires that any entity of the Federal Government that engages in, supports, or in any way

provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the CAA (42 USC 7401 (a)) before the action is otherwise approved. The Proposed Action Alternative project area is not in a non-attainment designation. Any greenhouse gasses emitted from the hand-held tools or equipment will be negligible. The Proposed Action Alternative would not conflict with or obstruct the implementation of the air quality management plan of Del Norte County, California.

3.2 Resources Analyzed in Detail

This EA analyzes the affected environment of the Proposed Action Alternative and No Action Alternative in order to determine the potential impacts and cumulative effects to the following environmental resources.

3.2.1 Water Resources

3.2.1.1 *Affected Environment*

The water resources potentially affected would be surface waters within and adjacent to the Proposed Action Alternative project area which include McGarvey Creek and the Klamath River.

McGarvey Creek is a third order watershed draining approximately 8.9 square miles. McGarvey Creek flows into the south side of the Lower Klamath River approximately 6.4 river miles upstream of the Pacific Ocean. Elevations in the watershed range from approximately 30 feet at the confluence with the Klamath River to approximately 1,040 feet in the headwaters. The upper reaches of McGarvey Creek are moderately to highly confined while the lower reach flows through a broad low-gradient floodplain that is routinely backflooded when the Klamath River is under high flow conditions. Lower McGarvey Creek can be characterized as a low gradient (less than 1 percent) meandering channel with alluvial deposits of gravel and fine-grained materials. The riparian community is dominated by a mix of deciduous trees (e.g., red alder and big-leaf maple) with very few native conifers as a result of historic logging activities. Prior to logging, the watershed was composed mostly of old growth conifers with a mix of shrubs and deciduous trees.

Stream flow in McGarvey Creek is driven by precipitation mostly in the form of rainfall with very limited snowfall events occurring in the upper watershed during extremely cold storms. Flow is generally highest during late fall through early summer and is driven by storm events. Stream flows are low to sub-surface in the lower watershed during late summer – early fall. Significant rainfall events can occur during the low flow period that can result in increased flows but typically these are short duration flow increases throughout the watershed.

3.2.1.2 Environmental Consequences

3.2.1.2.1 No Action

Under the No Action Alternative, Reclamation would not provide funding and NFWF would not administer \$108,910.50 to YTFP for the purpose of installing, maintaining, and monitoring two series of BDAs in McGarvey Creek. As a result, the objectives of increasing salmonid rearing capacity and greatly improving our understanding of BDA performance would not occur. However, YTFP could still seek other financial partners or fund the Proposed Action Alternative themselves, which is outside the scope of this EA.

3.2.1.2.2 Proposed Action Alternative

The analysis of effects on water resources associated with the Proposed Action Alternative was based on potential impacts to surface water quality and quantity. Under the Proposed Action Alternative, Reclamation would release grant funding to NFWF to administer a grant with YTFP for the for the purpose of installing, maintaining, and monitoring two series of BDAs in McGarvey Creek. The Proposed Action Alternative includes activities that would occur within the surface water resource of McGarvey Creek including portions of the floodplain. All actions that would occur around and/or in lower McGarvey Creek are described in detail in Chapter 2.2 and summarized below.

3.2.1.2.3 Water Quality

Although, the Proposed Action Alternative is not proposing any earth disturbing work that would result in removal of sediments from a waterway/wetland area, temporary activities that would occur within McGarvey Creek include installation and maintenance of two series of BDAs using hand held equipment and tools as described in depth in Chapter 2.2. The materials used for the BDAs are similar to sediments and woody debris produced by the McGarvey Creek watershed and thus, if not removed, would either decompose over time or “naturally” redistribute in the watershed.

Because of the comprehensive project BMPs, BDA composition and design, and planned monitoring, any potential changes to water quality resulting from the project would be localized and temporary. YTFP would monitor water quality throughout the project and be ready to respond if any impacts are detected.

The project was designed to protect and enhance water quality/quantity in McGarvey Creek, a priority Lower Klamath tributary. Project BMPs and mitigation measures are outlined in detail in Chapter 2.2.5. A majority of the proposed project BMPs either directly or indirectly relate to protecting water resources (e.g., working near/in the stream during the typical construction season, maintaining as much vegetation as possible, erosion control measures).

Pursuant to Section 404 of the Clean Water Act (CWA), the proposed project activities qualify for authorization under the Army Corps of Engineers' (USACE) – Nationwide Permit (NWP) 27 for “Aquatic Habitat Restoration, Establishment, and Enhancement Activities” (77 Fed. Reg. 10184, February 21, 2012). On November 14, 2016, YTFP’s funding partner, USFWS Partners for Fish and Wildlife, notified USACE of the qualification of the McGarvey BDA Project for water quality authorization under NWP 27 and submitted the required USFWS Work Plan and binding stream restoration agreement with YTFP. On December 5, 2016, USACE representative acknowledged notification receipt and did not provide any comments (Appendix F). All permit conditions/stipulations as outlined in NWP 27 would be met by YTFP.

The McGarvey BDA Project is located within the Yurok Tribe Reservation boundary and therefore the Yurok Tribe Environmental Program (YTEP) has CWA General 401 authority. YTFP has engaged YTEP regarding the project and submitted an YTEP Water Quality Permit application on June 8, 2017. YTFP would inform Reclamation when the CWA General 401 Order consultation has been completed and inform Reclamation of the resulting Notice of Applicability (NOA) and determination by the applicable regulatory agency prior to work being initiated on the proposed project. YTFP would follow the conditions and requirements listed in the NOA. Any other required water resource related permits would be obtained by YTFP prior to implementation of project activities.

3.2.1.2.4 Water Quantity

It is anticipated the BDAs would help sustain surface water within the ponded areas created by the structures as well as help sustain surface flows downstream of the structures by recharging ground water tables and by temporarily storing and slowly releasing water downstream. Changes in flow would be closely monitored as part of the planned project effectiveness monitoring. In addition, the BDAs would be maintained to provide adequate flow through and around, to allow fish passage and support aquatic life downstream of the sites.

The McGarvey BDA project would improve floodplain and wetland habitat and function by improving connectivity between the floodplain and stream channel, and creating low velocity, pool habitats upstream of the BDAs. That would provide ecosystem benefits associated with seasonal wetlands: water purification, flood reduction, ground water recharge, maintenance of surface flows downstream of these features, and provide high quality habitat for native species.

As described in the Chapter 2.2.5, integrated BMPs would be employed to minimize short term impacts to streams and floodplains as a result of construction activities. In summary, the project would result in a net benefit to wetland function, connectivity, and biological resources.

Overall, potential water quality impacts including temporary increases in turbidity and contribution of sediment instream would be negligible, localized, temporary

in nature, and only persist during construction activities. Furthermore, several project design features described in Section 2.2 have been incorporated into the Proposed Action Alternative to reduce instream work and direct water quality impacts. The activities associated with the proposed project are not expected to have any negative effect on the quantity of the surface water resource. Instead, the project is anticipated to result in seasonal increases of surface waters and increased ground water recharge.

3.2.1.3 Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action Alternative or No Action Alternatives when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

Implementation of the Proposed Action Alternative would not affect the quantity or long-term quality of the surface water resources. Therefore, the Proposed Action Alternative, when combined with other past, present, or reasonably foreseeable future actions would have no significant cumulative impacts on surface water resources.

3.2.2 Biological Resources

3.2.2.1 Affected Environment

McGarvey Creek supports populations of Chinook and coho salmon, steelhead and coastal cutthroat trout, and numerous other native fish and aquatic dependent amphibians and reptiles. Numerous mammal and bird species are known to inhabit the watershed at various times. The landowner (GDRC) regularly monitors for special status species, such as the northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*) as part of their timber operations and AHCP (GDRC 2007). The riparian community is currently composed of a mix of shrubs (e.g., salmonberry and thimbleberry), ferns, deciduous trees (e.g., red alder and big-leaf maple), California bay, with very few native conifers as a result of historic logging activities. Prior to logging, the watershed was composed mostly of old growth conifers with a mix of native shrubs and hardwoods.

Animal species that are protected pursuant to the California and Federal endangered species acts, or are species that are “fully protected” by California statute (Fish and Game Code 3503.5, 3505, 3511, 4700, 5050, and 5515), that may occur within or near the project area are shown below in table 2. This list was derived from databases maintained by CDFW and USFWS covering the Requa and Fern Canyon USGS quadrangles.

Table 2.—List of ESA and Special Status Species Potentially Present in the Proposed Action Alternative Area

Del Norte County, California - USGS Fern Canyon Quad Species List			
Phylum	Common Name	Scientific Name	Status
Amphibian	Del Norte Salamander	<i>Plethodon elongates</i>	State Candidate
Amphibian	Southern Torrent Salamander	<i>Rhyacotriton variegates</i>	State Candidate
Amphibian	Western Tailed Frog	<i>Ascaphus truei</i>	State Candidate
Amphibian	Northern Red Legged Frog	<i>Rana aurora aurora</i>	State Candidate
Amphibian	Black Toad	<i>Bufo boreas exsul</i>	Fully Protected
Fish	Tidewater Goby	<i>Eucyclogobius newberryi</i>	Federal Endangered
Fish	SONCC Coho Salmon	<i>Oncorhynchus kisutch</i>	Federal Threatened
Fish	Coastal Cutthroat Trout	<i>Oncorhynchus clarkii clarkia</i>	State Candidate
Bird	Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Federal Threatened
Bird	Northern Spotted Owl	<i>Strix occidentalis caurina</i>	Federal Threatened, Fully Protected
Bird	Turkey Vulture	<i>Cathartes aura</i>	Fully Protected
Bird	White-Tailed Kite	<i>Elanus leucurus</i>	Fully Protected
Bird	Brown Pelican	<i>Pelecanus occidentalis</i>	Federal Endangered, Fully Protected
Bird	Bald Eagle	<i>Haliaeetus leucocephalus</i>	State Endangered, Fully Protected
Bird	Golden Eagle	<i>Aquila chrysaetos</i>	Fully Protected
Bird	Northern Harrier	<i>Circu cyaneus</i>	Fully Protected
Bird	Sharp-Shinned Hawk	<i>Accipter striatus</i>	Fully Protected
Bird	Cooper's Hawk	<i>Accipter cooperii</i>	Fully Protected
Bird	Northern Goshawk	<i>Accipter gentilis</i>	Fully Protected
Bird	Red-Shouldered Hawk	<i>Buteo lineatus</i>	Fully Protected
Bird	Swainson's Hawk	<i>Buteo swainsoni</i>	Fully Protected
Bird	Red-Tailed Hawk	<i>Buteo jamaicensis</i>	Fully Protected
Bird	Rough-Legged Hawk	<i>Buteo lagopus</i>	Fully Protected
Bird	Osprey	<i>Pandion haliaetus</i>	Fully Protected
Bird	Merlin	<i>Falco columbarius</i>	Fully Protected
Bird	American Kestrel	<i>Falco sparveius</i>	Fully Protected
Bird	Peregrine Falcon	<i>Falco peregrinus</i>	Fully Protected
Bird	Barn Owl	<i>Tyto alba</i>	Fully Protected
Bird	Long-Eared Owl	<i>Asio otus</i>	Fully Protected
Bird	Short-Eared Owl	<i>Asio flammeus</i>	Fully Protected
Bird	Great Horned Owl	<i>Bubo virginianus</i>	Fully Protected
Bird	Barred Owl	<i>Strix varia</i>	Fully Protected
Bird	Western Screech Owl	<i>Otus kennicottii</i>	Fully Protected
Bird	Northern Pygmy Owl	<i>Glaucidium gnoma</i>	Fully Protected
Bird	Great Blue Heron	<i>Aredea Herodias</i>	Fully Protected
Bird	Cattle Egret	<i>Bubulcus ibis</i>	Fully Protected

Del Norte County, California - USGS Fern Canyon Quad Species List			
Phylum	Common Name	Scientific Name	Status
Bird	Green Heron	<i>Butorides virescens</i>	Fully Protected
Bird	Black-Crowned Night-Heron	<i>Nycticorax nycticorax</i>	Fully Protected
Bird	Great Egret	<i>Ardrea alba</i>	Fully Protected
Bird	Snowy Egret	<i>Egretta thula</i>	Fully Protected
Bird	American Bittern	<i>Botaurus lentiginosus</i>	Fully Protected
Mammals	Sonoma tree vole	<i>Arborimus pomo</i>	State Candidate
Mammals	West Coast Fisher	<i>Martes pennant</i>	State Candidate

Although these species occur in the Requa and Fern Canyon USGS quadrangles, the following are not found in the project area due to lack of suitable habitat, edaphic conditions, and/or because the current range for the species is outside the project area. YTFP would be required to ensure compliance with all State and Federally listed endangered species act.

3.2.2.2 Environmental Consequences

3.2.2.2.1 No Action

Under the No Action Alternative, Reclamation would not provide funding and NFWF would not administer \$108,910.50 to YTFP for the purpose of installing, maintaining, and monitoring two series of BDAs on/near McGarvey Creek. As a result, the objectives of increasing salmonid rearing capacity and greatly improving our understanding of BDA performance would not occur. There would be no change to the proposed site environment, and, consequently, there would be no change or potential benefits experienced related to biological resources from current conditions under the No Action Alternative.

3.2.2.2.2. Proposed Action Alternative

Under the Proposed Action Alternative, Reclamation would release grant funding to NFWF to administer a grant with YTFP for the for the purpose of installing, maintaining, and monitoring two series of BDAs in McGarvey Creek to increase salmonid rearing capacity and greatly improve understanding of BDA performance. The Proposed Action Alternative's potential impacts to all species included in Table 2 as a result of the Proposed Action Alternative, have been considered. The proposed restoration activity was also analyzed in the 2013 BiOp. Consistent with the 2013 BiOp, restoration activities that require instream activities would be implemented during low flow periods between June 15 and November 1 to avoid or minimize impacts to fish, aquatic invertebrates, and amphibians. Reclamation has consulted NMFS on this proposed project and received concurrence that the Proposed Action Alternative is consistent with the analysis and determination described in the 2013 BiOp.

Fish Relocation Activities —Should fish relocation activities be required for the proposed project, YTFP would relocate fish as described in Chapter 2.2, coordinate with CDFW and NMFS prior to any fish handling being conducted. In general, CDFW personnel (or designated agents) would capture and relocate fish (and amphibians) away from the restoration project work site to minimize adverse effects to listed species. All encounters with coho salmon would be reported to Reclamation as stated in Chapter 2.2.

Increased Mobilization of Sediment within the Stream Channel —The proposed project includes some ground disturbance in or adjacent to McGarvey Creek that may increase temporary turbidity and suspended sediment levels within the project work site and downstream areas. Therefore, BDA construction may result in increased mobilization of sediment into streams. However, the magnitude and intensity of ground disturbance is expected to be small and isolated to discreet stream and riparian work areas. In addition, a number of integrated BMPs would be employed to contain any turbid water created while working to limit effects to any present fish species.

Beneficial Effects to Coho Salmon —The proposed project would be designed and implemented consistent with the techniques and minimization measures presented in the CDFW's Restoration Manual (CDFG 2004) to maximize the benefits of the project while minimizing effects to salmonids. The McGarvey BDA Project is for the purpose of restoring degraded salmonid habitat and is intended to provide additional coho salmon habitat. This project is anticipated to contribute to the recovery of coho over the long-term.

Noise, Motion, and Vibration Disturbance from Heavy Equipment Operation — Noise, motion, and vibration produced by heavy equipment operation are expected as part of the proposed project. However, the use of equipment is expected to result in insignificant effects to native fish. Salmonids and other native biota would be able to avoid interaction with instream machinery by voluntarily relocating to other habitats or if deemed necessary by employing temporary exclusion and/or relocation measures as described in detail in Chapter 2.2.

Impacts to Migratory Birds and their Nesting Habitats —YTFP, GDRC, and USFWS Partners for Fish Wildlife Program (Arcata Office) have coordinated regarding potential bird restrictions and determined there are currently no bird restrictions identified for the McGarvey Creek project area during the construction season. YTFP would annually coordinate with GDRC and USFWS on bird activity prior to initiating construction. If bird activity conditions for ESA listed species, migratory birds, and/or raptors change within the project area, then YTFP would employ all related restrictions and BMPs as set forth by GDRC and USFWS. Additionally, any trees proposed for removal would be visually inspected to ensure no bald eagle nests are present. Should an eagle nest be present, further coordination with the Arcata USFWS Office would be necessary. By following these BMPs, no impacts to species protected under the Bald and

Golden Eagle Protection Act or Migratory Bird Treaty Act are expected as a result of implementation of the Proposed Action Alternative proposed project.

3.2.2.3 Cumulative Impacts

As the Proposed Action Alternative is not expected to result in significant direct or indirect impacts to biological resources due to any impacts being temporary, localize, and beneficial in the long term, there would be no cumulative impacts to biological resources.

3.2.3 Cultural Resources

“Cultural Resources” is a broad term that applies to prehistoric, historic, and architectural resources, as well as to traditional cultural properties. Cultural resources can include both archaeological sites, which contain evidence of past human use, and the built environment, which consists of structures such as buildings, roadways, dams, and canals. The National Historic Preservation Act (NHPA) of 1966, as amended, is the primary Federal legislation that outlines the Federal Government’s responsibilities related to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of its undertakings on historic properties. Historic properties are, by definition, cultural resources that are included in, or eligible for inclusion in, the National Register of Historic Places (National Register). The evaluation criteria for National Register eligibility are outlined at 36 CFR Part 60.4. The Section 106 process also requires consultation with the State Historic Preservation Officer (SHPO), or Tribal Historic Preservation Officer (THPO) where applicable, to seek concurrence with the finding of effect for the undertaking.

3.2.3.1 Affected Environment

The project is located in the McGarvey Creek watershed, tributary to the Klamath River, in Del Norte County, California. More specifically, the downstream boundary of the project is located approximately 5,774 feet upstream of its confluence with the Klamath River. The cumulative area of the project, including all activities, staging areas, and access trails is approximately 0.43 acres.

3.2.3.2 Environmental Consequences

3.2.3.2.1 No Action

Under the No Action Alternative, Reclamation would not provide funding and NFWF would not administer \$108,910.50 to YTFP for the purpose of installing, maintaining, and monitoring two series of BDAs on/near McGarvey Creek. As a result, the objectives of increasing salmonid rearing capacity and improving

understanding of BDA performance would not occur. There would be no change to the proposed site environments, and, consequently, there would be no change in impacts to cultural resources from current conditions under the No Action Alternative.

3.2.3.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, Reclamation would release grant funding to NFWF to administer a grant with YTFP for the purpose of installing, maintaining, and monitoring two series of BDAs in McGarvey Creek to increase salmonid rearing capacity and greatly improve our understanding of BDA performance. This action constitutes an undertaking with the potential to cause effects to historic properties, assuming such properties are present, requiring compliance with Section 106 of the NHPA as amended.

As outlined in 36 CFR Part 800, which implements Section 106 of the NHPA, for undertakings on tribal lands for which an Indian tribe has assumed the Section 106 responsibilities of the State Historic Preservation Officer (SHPO), Section 106 consultation is with the THPO in lieu of the SHPO. Pursuant to 36 CFR § 800.4(d)(1), the USFWS consulted with and received concurrence from the Yurok Tribe THPO through correspondence dated February 22, 2017, regarding a Section 106 finding of no historic properties affected for the McGarvey Creek BDA Project. Similarly, and based on the information used by USFWS for their Section 106 compliance, Reclamation requested, and received, concurrence from the Yurok Tribe THPO through correspondence dated May 17, 2017, on a finding of no historic properties affected for Reclamation's action. Receipt of THPO concurrence fulfilled Reclamation's Section 106 responsibilities for this undertaking. Implementation of the Proposed Action alternative would result in no impacts to cultural resources.

3.2.3.3 Cumulative Impacts

The Proposed Action Alternative is anticipated to result in no adverse effects to cultural resources, and, therefore, would not contribute to cumulative impacts to cultural resources when combined with past, present, and reasonably foreseeable future actions.

CHAPTER 4

ENVIRONMENTAL COMMITMENTS

In addition to the best management practices and the mitigation measures integrated in to the Proposed Action Alternative detailed in Chapter 2.2.5, the following environmental commitments and permitting conditions would be implemented before, during, and after construction.

- **Environmental Permitting** – YTFP would be responsible for complying with all environmental requirements associated with applicable Federal, State, and local permits or approvals related to the Proposed Action Alternative. These permits and approval may include, but are not limited to: ACOE, CWA Section 404 permit and California State Water Resources Control Board's CWA Section 401 certification, CDFW 1600 Streambed alterations permit, and the 2013 BiOp.
- **Construction Period** – Construction would take place from approximately June 15 to November 1.
- **Noise** – Construction would be conducted between 7:00 a.m. to 7:00 p.m.
- **Water Resources** –
 - No mechanized equipment would operate within the wetted channel unless working from the banks is deemed infeasible and flows are at or below summer baseflow conditions (refer to Section 2.2 and Integrated BMPs).
 - All mechanized equipment fueling, servicing, and overnight parked would occur at least 200 feet from any wetted channel, riparian area, or delineated wetland, **or** on pre-existing upland roads/landings.
 - All equipment would be cleaned and inspected prior to project implementation for water quality internal controls and noxious weed abatement purposes.
 - All permit conditions and stipulations identified in NWP 27 and CWA 401 certification would be followed.
- **Biological Resources** – Techniques and minimization measures presented in NMFS' 2011/06430 BiOp (NMFS 2011) and those listed in Chapter 2.2.5 would be implemented and followed:
 - As outlined in the 2013 BiOp, YTFP would report immediately to Reclamation the total number of coho salmon captured, relocated, injured, or killed during any stage of the Proposed Action Alternative activities. Any coho salmon captured, relocated, injured, or killed would be reported to Reclamation immediately. All coho salmon mortalities must be retained, placed in an appropriately sized whirl-pak or zip-lock bag, labeled with the date and time of collection, fork

length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by Reclamation as coordinated with the NMFS.

- Visual inspections of project sites would occur prior to construction activities (including mobilization of construction equipment). If bald or gold eagles or other migratory birds or their nests are present in areas where tree removal or other activities that may disrupt nesting, further coordination with the Arcata, California, USFWS office would occur.
- **Cultural Resources** – YTFP will follow the Yurok Tribe's Inadvertent Discovery Policy. In the case that any cultural resources, either surface or subsurface, are inadvertently discovered during construction, construction in the area of the inadvertent discovery would cease, Reclamation's Mid-Pacific Regional archaeologist would be notified, and coordination with the THPO would be initiated. THPO/Reclamation would make an assessment of the resource and conduct additional consultations as required.

CHAPTER 5

CONSULTATION AND COORDINATION

This section presents the agencies and parties that were coordinated or consulted with during development of this document. A summary of permits and approvals acquired by YTFP resulting from these consultation and coordination efforts can be found in table 1.

5.1 Public Involvement

Reclamation issued a news release on May 29, 2018 announcing a draft EA was available for public review and invited comments from May 29, 2018 to June 12, 2018, and no comments were received. Non-substantive editorial edits were made to the draft EA and are currently reflected throughout this final version. Electronic versions of the draft and the final EA are located online at https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=33343. Physical copies of both versions will be available at:

Bureau of Reclamation
Klamath Basin Area Office
6600 Washburn Way
Klamath Falls, Oregon 97603

5.2 Persons or Agencies Consulted during Development of this EA

- YTFP – Sarah Beesley, Fisheries Biologist II
- YTFP – Koiya Tuttle, Assistant Director
- Yurok Tribe Cultural Department – Frankie Meyers, Tribal Historic Preservation Officer
- USFWS Partners for Fish and Wildlife (Funding Partner) – Greg Gray, Fish and Wildlife Biologist Arcata
- GDRC – Jeremy Wright, Aquatic Habitat Conservation Plan Roads Supervisor
- GDRC – Nicholas Simpson, Senior Environmental Scientist (Specialist)
- Reclamation – Joanne Goodsell, Archaeologist Mid-Pacific Region
- Reclamation – Tara Jane Campbell Miranda, Natural Resource Specialist

Environmental Assessment
McGarvey Beaver Dam Analogue Project

- NMFS – Jim Simondet, Fisheries West Coast Region California Coastal Area Office
- USACE – L. Kasey Sirkin, Lead Biologist, Eureka Field Office

REFERENCES

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- National Oceanic and Atmospheric Administration—National Marine Fisheries Service (NMFS). 1999. Designated Critical Habitat; Central California Coast and Southern Oregon/Northern California Coasts Coho Salmon. Federal Register Vol. 64 No. 86 Rules and Regulations. p. 24049.
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- National Marine Fisheries Service (NMFS). 2011. NMFS Restoration Center's Programmatic Biological Opinion. Citation Reference: NMFS BiOp 2011/06430.
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APPENDIX A
SITE LOCATION MAPS
OF ACTIVITIES INCLUDING
STAGING AREAS

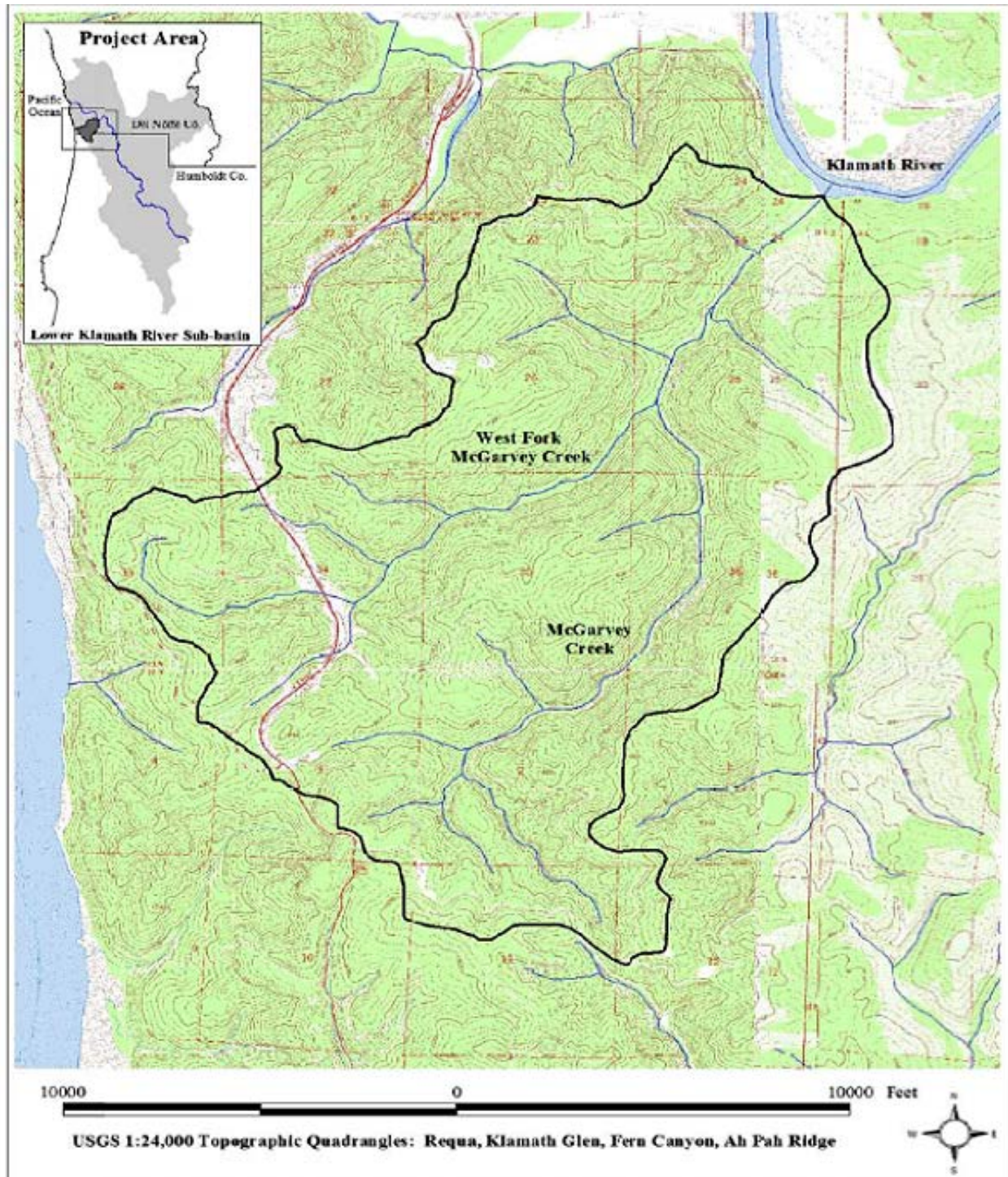


Figure A-1. Map depicting the McGarvey Creek watershed, Lower Klamath River, California.

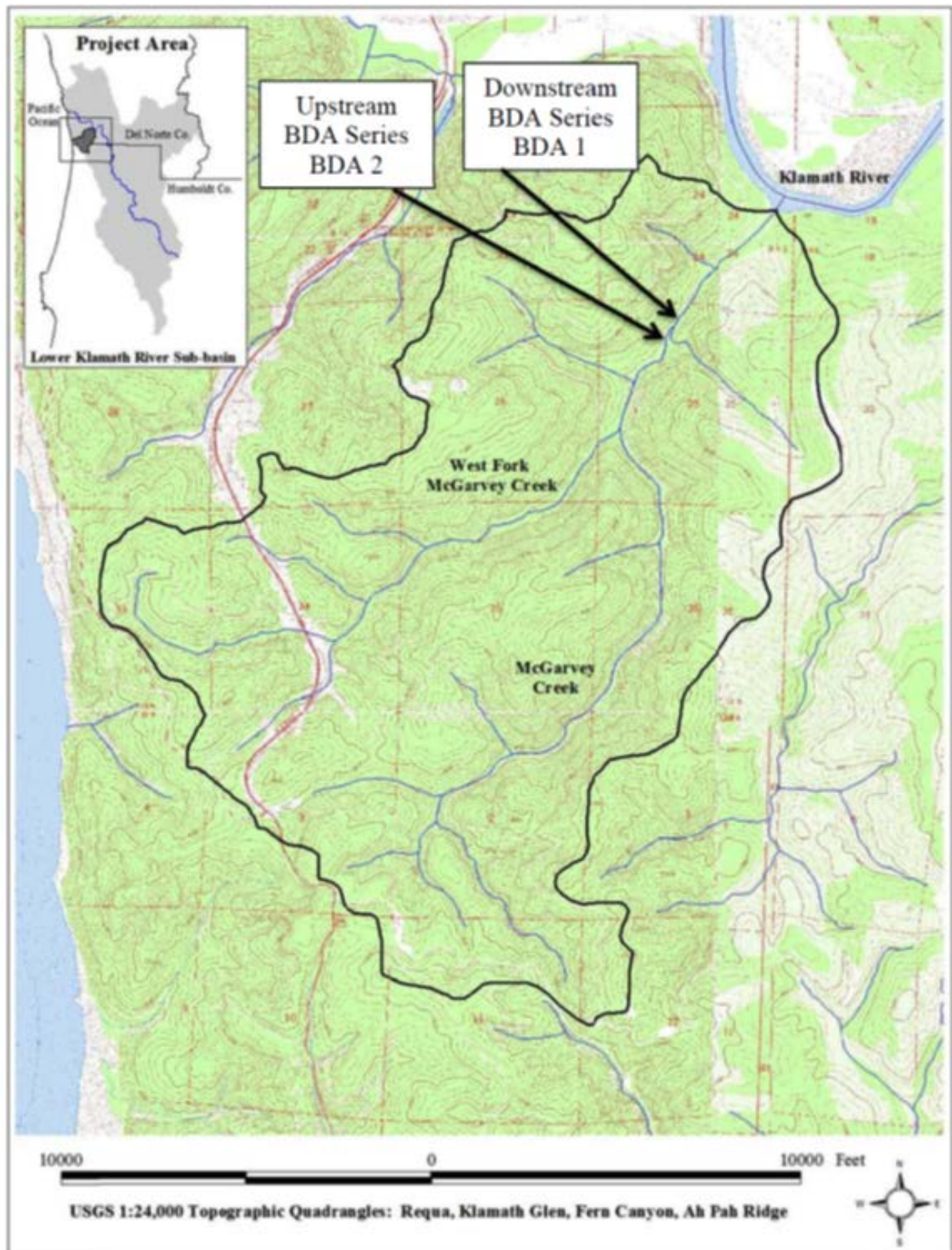


Figure A-2. Map depicting the proposed beaver dam analogue (BDA) locations in lower McGarvey Creek, Lower Klamath River.

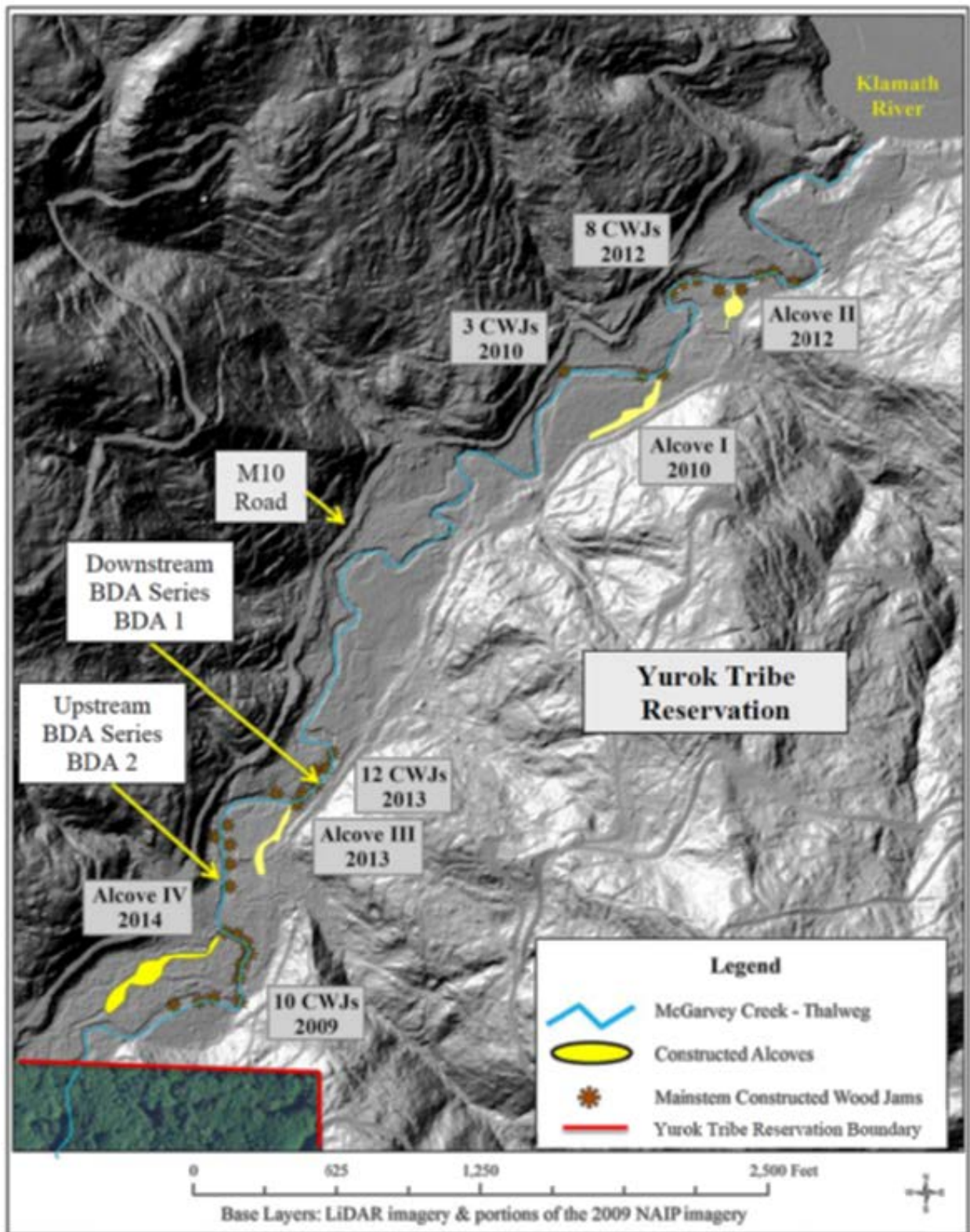


Figure A-3. Map depicting implemented restoration projects and the proposed beaver dam analogue (BDA) locations in lower McGarvey Creek, Lower Klamath River.

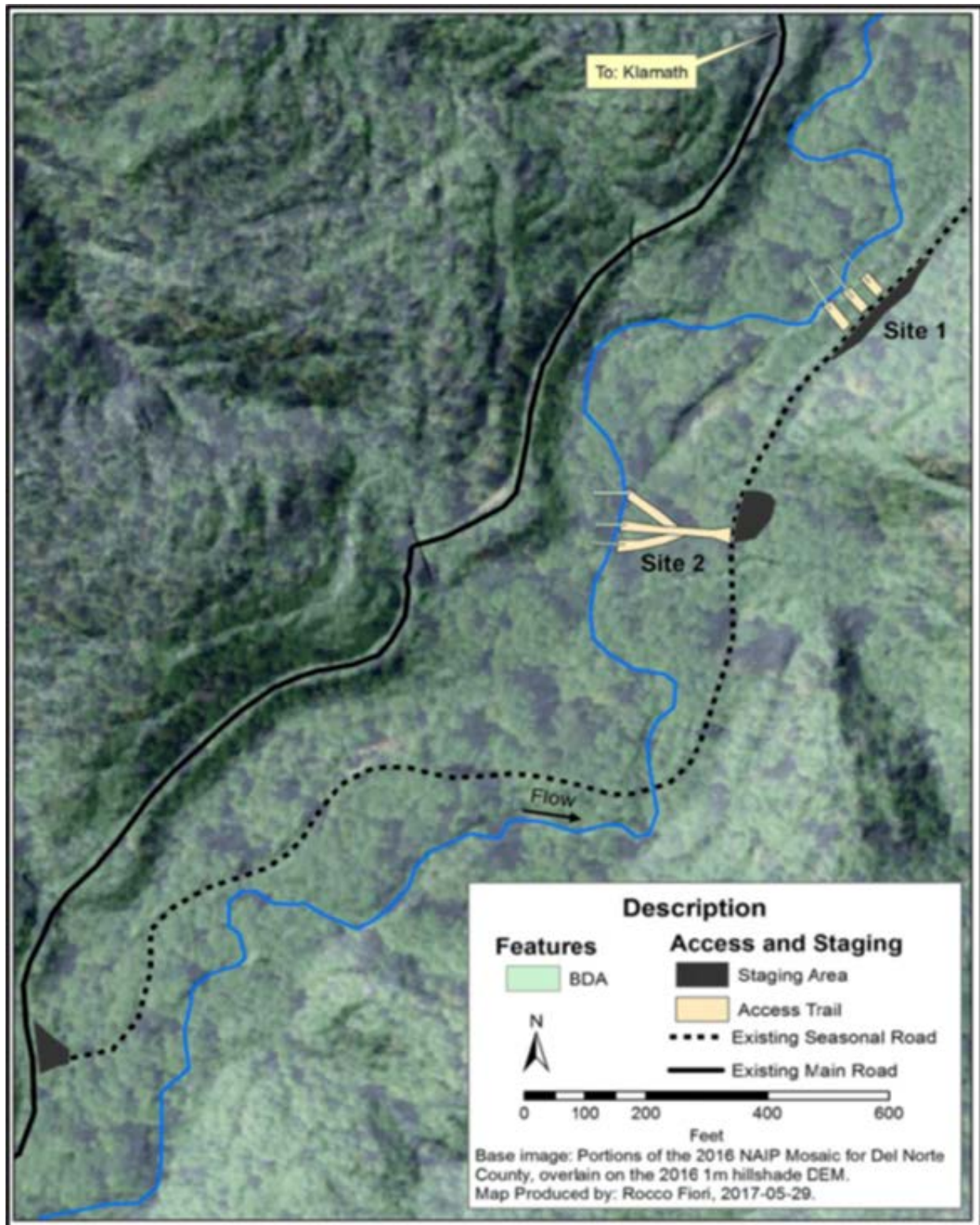


Figure A-4. McGarvey Creek beaver dam analogue project design map, Lower Klamath River.

APPENDIX B
PHOTOGRAPHS OF LOWER
MCGARVEY CREEK AND
PROJECT SITE



Figure B-1. Looking upstream at most downstream BDA site and entrance of a constructed alcove (McGarvey Alcove III), McGarvey Creek, Klamath River, CA. (October 2013)



Figure B-2. Looking downstream at most downstream BDA site (left) and looking upstream at McGarvey Alcove III (right), McGarvey Creek, Klamath River, CA. (March 2016)



Figure B-3. Looking downstream at McGarvey Creek and a constructed wood jam in the vicinity of the most upstream BDA site, McGarvey Creek, Klamath River, CA (March 2016).



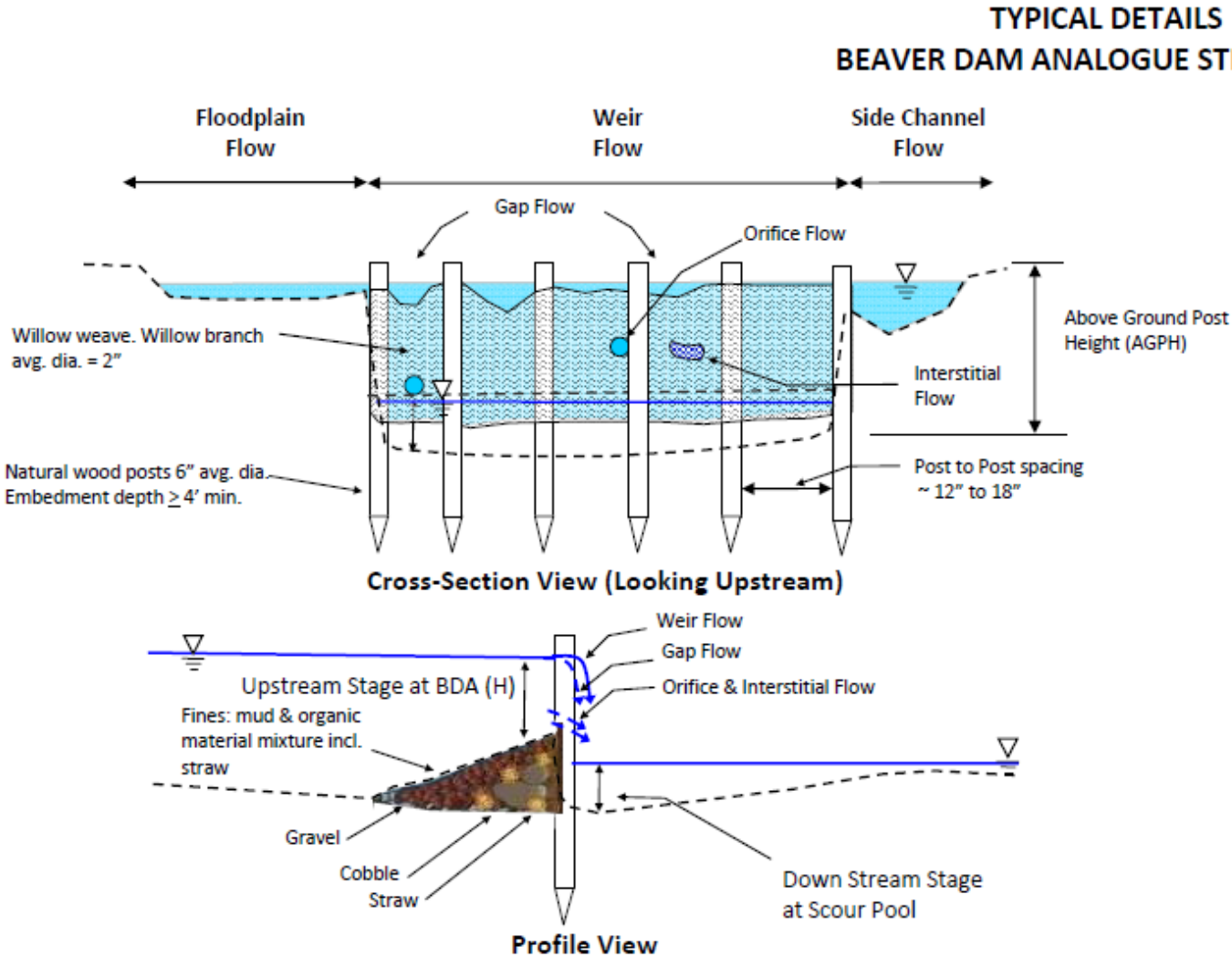
Figure B-4. McGarvey Creek within the proposed BDA project reach that depicts dry channel conditions (top) and natural beaver influenced conditions (bottom), McGarvey Creek, Klamath River, CA. *Note: Water Year 2015 was a severely dry year – drought conditions. (October 2015)*



Figure B-5. Looking downstream at PIT tag antenna arrays installed to help monitor salmonid population at McGarvey Creek, Klamath River, CA. *Note: MUX platform in tree.* (January 2013)

APPENDIX C

ENGINEERING OR DESIGN/PLANNING DRAWINGS



Notes:

1) Each site will include one primary BDA to attain the design inundation depth and a maximum of three ancillary BDAs. Ancillary BDAs will be installed to provide fish passage and hydraulic function of the primary BDA.

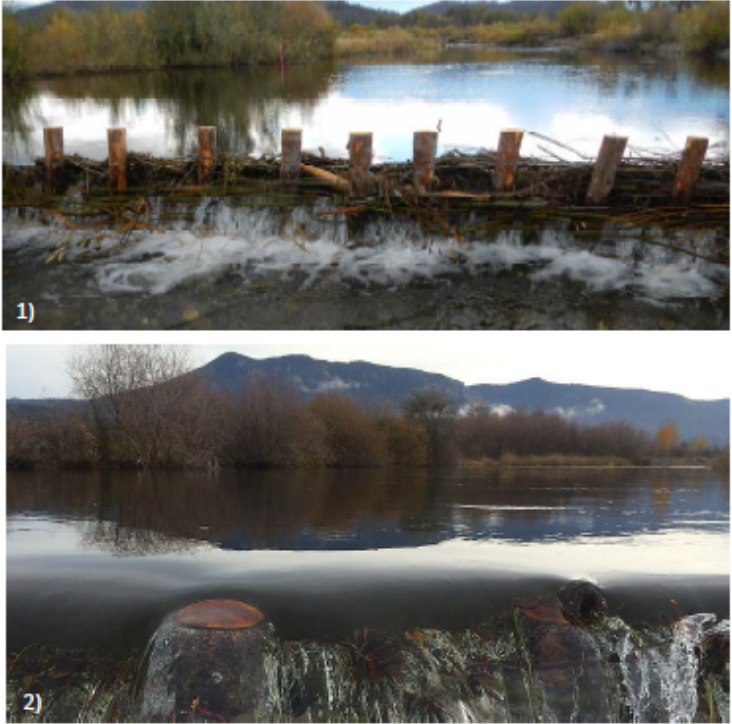
2) Primary BDAs will have a maximum length of 120 feet with approximately 70 feet that spans the active channel. The remaining 50 feet are optional and would be installed on the floodplain as a countermeasure to limit streambank erosion. Ancillary BDAs will be approximately 70 feet long, span the active channel and may project 5 to 10 feet into the streambank.

3) Primary BDAs will be comprised of approximately 9.8 yd³ (24%) earth materials and 30.8 yd³ (76%) plant materials including posts and weft. Each ancillary BDA will be comprised of approximately 5.4 yd³ (40%) earth materials and 8.3 yd³ (60%) plant materials including posts and weft. Site 1 and 2 will likely require 3 and 2 ancillary BDAs, respectively, to provide fish passage. The schedule of quantities reflects these design conditions. However, a design goal is to use the least amount of materials if possible.

4) The above ground post height (AGPH) will be cut to facilitate a smooth nappe during weir flow conditions, which generally occur during high flow events. This design feature will aid passage success of leaping fish (see photograph 2 for example).

5) Simplified hydraulic flow paths are illustrated for high flow conditions. During low flow conditions interstitial, orifice, gap and side channel flow conditions will be maintained to facilitate fish passage by adjusting BDA permeability through the addition of fines and plant materials such as leaves and straw.

**PHOTOGRAPHS OF TYPICAL
BEAVER DAM ANALOGUES**



ESTIMATED SCHEDULE OF QUANTITIES

Material Type	Primary BDA Volume (yd ³)	Ancillary BDA Volume (yd ³)	Total Material Volume (yd ³)
Cobble	2.8	1.6	13.6
Gravel	3.5	1.9	16.5
Fines	3.5	1.9	16.5
Plant Materials	2.0	1.1	9.5
Posts & Weft	28.8	7.2	92.8
Site 1 Total	40.6 (1/site)	41.1 (3/site)	81.7
Site 2 Total	40.6 (1/site)	27.4 (2/site)	68.0
Total	81.2	68.5	148.7
Percent Earth Materials	24.0	40.0	31.0



YUROK TRIBE FISHERIES PROGRAM

SHEET TITLE
TYPICAL DETAILS
BEAVER DAM ANALOGUE STRUCTURES

PROJECT
MCGARVEY CREEK



Prepared by / Date
RF FGS / Nov 2017

Sheet Number
1 of 1

APPENDIX D
ADDITIONAL
PROJECT DETAILS –
ESTIMATED SCHEDULE

Environmental Assessment
McGarvey Beaver Dam Analogue Project

NFWF Project Funding Timeline												
June 1, 2016 to May 31, 2019												
	June	July	August	September	October	November	December	January	February	March	April	May
2016-2017												
Planning & Environmental Compliance												
Topographic Surveys												
Habitat Assessments												
Water Quality / Quantity Assessments												
2017-2018												
Planning & Environmental Compliance												
BDA Construction & Major Repair												
BDA Minor Repair												
Topographic Surveys												
Habitat Assessments												
Water Quality / Quantity Assessments												
PIT Tag Antenna Installation												
PIT Tag Antenna Maintenance												
Reporting/Outreach												
2018-2019												
BDA Construction & Major Repair												
BDA Minor Repair												
Topographic Surveys												
Habitat Assessments												
Water Quality / Quantity Assessments												
PIT Tag Antenna Maintenance												
Reporting/Outreach												

APPENDIX E
INDIAN TRUST ASSET
COORDINATION

**Indian Trust Assets Request
Form (MP Region)**

Submit your request to your office's ITA designee or to MP-400, attention Deputy Regional Resources Manager.

Date: 06/12/17

Requested by (office/program)	Amanda Babcock, Natural Resource Student Trainee, KBAO
Fund	17XR0680A3
WBS	RX.001261ME.3000000
Fund Cost Center	25320000
Region # (if other than MP)	
Project Name	Increasing Year-Round Rearing Capacity & Habitat Quality for Natal & Non-Natal Populations of Coho Salmon in a Priority Lower Klamath Tributary – McGarvey BDA Project
CEC or EA Number	KBAO-EA-2017-XXX
Project Description (continued in Exhibit C)	<p>Reclamation would provide funding in the amount of \$108,910.50 to the National Fisheries and Wildlife Federation (NFWF) to administer to Yurok Tribe Fisheries Program (YTFP) and provide a notice to proceed for the purpose of installing, maintaining, and monitoring a series of beaver dam analogs (BDAs) in mainstem McGarvey Creek to increase salmonid rearing capacity and improve our understanding of this type of treatment.</p> <p>The Proposed Action would occur on Green Diamond Resource Company (GDRC) property (i.e. private lands) located in lower McGarvey Creek. More specifically, the most downstream BDA series will be installed ~5,774 feet upstream of the confluence with the Klamath River while the upstream BDA series will be installed ~6,634 feet upstream of the Klamath River confluence.</p> <p>Given the critical need to better understand BDA performance, a majority of the NFWF funding will be used to support biological and physical monitoring of the project. NFWF funding will also help support a majority of the BDA installation and repair activities scheduled for the typical construction season: June 15 – November 1. United State Fish and Wildlife Service (USFWS) funds will be used to fund a majority of the BDA installation and maintenance activities with minimal support for physical monitoring activities and no financial support of the biological monitoring activities.</p>

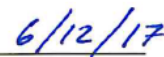
	Under the Proposed Action Alternative, Reclamation would approve YTTFP to conduct the following: 1) BDA installation and BDA repairs during the typical construction season (i.e. June 15 – November), and 2) biological and physical monitoring as described below.
*Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)	<p>General: The project is located in the McGarvey Creek watershed, tributary to the Klamath River, in Del Norte County, California. McGarvey Creek is located near the town of Klamath, California. The project area is contained within the Yurok Tribe Reservation and includes the stream channel and adjacent floodplain habitats of lower McGarvey Creek.</p> <p>The project area is contained within Range 1 East, Township 13 North, Sections 24-25 (USGS Topographic Quadrangle: Fern Canyon, CA).</p> <p>Latitude: 41.494 Longitude: : -124.004</p>



Signature



Printed name of preparer



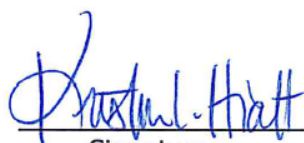
Date

ITA Determination:

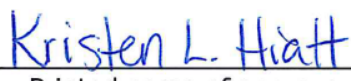
The proposed Increasing Year-Young Rearing Capacity & Habitat Quality for Natal & Non-Natal Populations of Coho Salmon in a Priority Lower Klamath Tributary – McGarvey BDA Project activity is located on Yurok Tribe designated land (see attached image).

This project is proposed for implementation by the Yurok Tribe to assist in restoring and enhancing habitat for natal and non-natal salmon. The proposed activity does appear to be in an area that may impact Indian hunting and/or fishing resources, however the resultant impacts are expected to be insignificant in nature as the purpose of the proposed action is to restore and enhance salmon habitat, and is anticipated to have a beneficial impact on the resource.

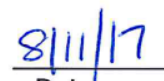
It is reasonable to assume that the proposed action **will not** have any adverse impacts on ITAs.



Signature



Printed name of approver



Date

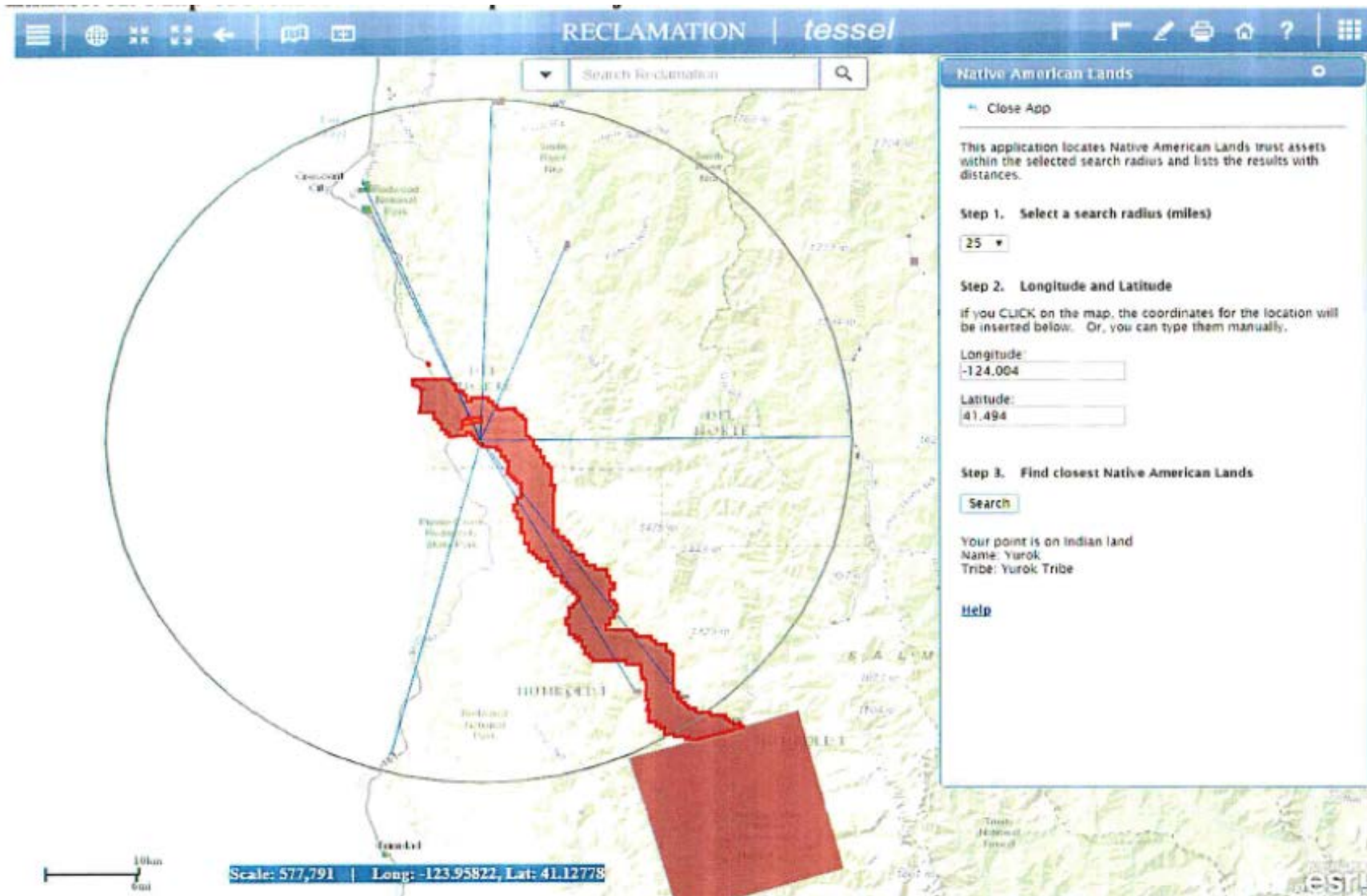


Figure E-1. Map of nearest ITA to proposed project site.

APPENDIX F

COORDINATION WITH USACE



Gray, Greg <greg_gray@fws.gov>

McGarvey Creek project (UNCLASSIFIED)

Sirkin, L K CIV USARMY CESP (US) <L.K.Sirkin@usace.army.mil>
To: "greg_gray@fws.gov" <greg_gray@fws.gov>

Mon, Dec 5, 2016 at 1:39 PM

CLASSIFICATION: UNCLASSIFIED

Dear Mr. Gray -

Thank you for providing me with the information on the McGarvey Creek project. As we discussed, at this time the Corps does not have any comments regarding the project. However, please inform of us of any changes to the project or any information you can provide regarding project completion so we can enter the project into our system to keep track of it in our database. Please let us know if we can do anything to assist further. Thank you -

L. Kasey Sirkin
U.S. Army Corps of Engineers
Lead Biologist - Eureka Field Office
601 Startare Drive
Eureka, CA 95502
707-443-0855
l.k.sirkin@usace.army.mil

12/5/2016

DEPARTMENT OF THE INTERIOR Mail - McGarvey Creek Beaver Dam Analogue Project - NWP 27



Gray, Greg <greg_gray@fws.gov>

McGarvey Creek Beaver Dam Analogue Project - NWP 27

Gray, Greg <greg_gray@fws.gov>
To: Kasey Sirkin <l.k.sirkin@usace.army.mil>

Mon, Nov 14, 2016 at 11:52 AM

Hi Kasey -

In 2016, the Service's "Partners for Fish and Wildlife Program" funded the Yurok Tribe to implement the *McGarvey Creek Beaver Dam Analogue Pilot Project*. Co-funded by the Bureau of Reclamation and the National Fish and Wildlife Foundation's Coho Enhancement Fund, the project will install and monitor 6 beaver dam analogue structures at two sites in lower McGarvey Creek, on lands located within the Yurok Tribe Reservation boundary. The primary objective of this project is to increase low-velocity pool habitat for rearing Coho salmon, particularly during the summer baseflow period.

The project qualifies for water quality authorization under the reporting provision of Nationwide Permit 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities). Pursuant to the ACOE San Francisco District's regional conditions, I've attached a copy of the Service's Work Plan and binding stream restoration agreement with the Yurok Tribe. The Work Plan contains supporting information and design specs on beaver analogue structures, as well as a map of the project reach.

The project is slated to begin in June 2017.

If you have any questions or concerns, or require additional information, don't hesitate to give me a call.

Thanks,
Greg

Greg Gray | Biologist, Habitat Restoration | U.S. Fish & Wildlife Service | 1655 Heindon Road, Arcata, CA 95521 | Cell: 707.407.8401 | Office: 707.825.5130 | Email: greg_gray@fws.gov | Fax: 707.822.8411 | www.fws.gov/arcata

McGarvey BDA Project Plan and Agreement (for USACE).pdf
2306K